

**TESTIMONY**

**Before  
The United States House of Representatives  
Committee on Energy and Commerce, Subcommittee on Health**

**Hearing on  
Answering the Call: Medical Monitoring and Treatment of 9/11 Health  
Effects**

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**Presented By  
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Good morning.

Chairman Frank J. Pallone, Ranking Member Deal, and other esteemed members of the Committee on Energy and Commerce Sub-Committee on Health, I thank you for having invited me to present testimony before you today on “Answering the Call: Medical Monitoring and Treatment of 9/11 Health Effects”.

My name is Robin Herbert, MD. I am an Associate Professor in the Department of Community and Preventive Medicine of the Mount Sinai School of Medicine. I serve as Director of the World Trade Center Medical Monitoring and Treatment Program Data and Coordination Center (DCC) based at Mount Sinai. The World Trade Center Medical Monitoring and Treatment Program is supported by grants from the National Institute for Occupational Safety and Health (NIOSH). The program is a consortium consisting of the DCC and five Clinical Centers of Excellence in New York and New Jersey, with a National Program across the United States, that diagnoses, treats, documents, and tracks the illnesses that have developed in the workers and the volunteers who responded to 9/11.

Also with me is my colleague Philip Landrigan, MD. Dr. Landrigan is a Professor and Chairman of the Department of Community and Preventive Medicine of the Mount Sinai School of Medicine. In his capacity as Chairman of Community and Preventive Medicine at Mount Sinai, he oversees the World Trade Center (WTC) Medical Monitoring and Treatment Program Clinical Center of Excellence at Mount Sinai as well as the World Trade Center Data and Coordination Center.

Today, I shall present a summary of our medical findings in the 9/11 responders. I shall comment also on the critical need for continuing support for Centers of Excellence that have the expertise and the hard-won experience that is essential to sustain high-quality medical follow-up and treatment for these brave men and women.

### **The Diverse Population of 9/11 Responders**

In the days, weeks, and months that followed September 11, 2001, more than 50,000 hard-

working Americans from across the United States responded selflessly – without concern for their health or well-being – when this nation called upon them to serve. They worked at Ground Zero, the former site of the World Trade Center, and at the Staten Island landfill, the principal depository for WTC wreckage. They worked in the Office of the Chief Medical Examiner. They worked beneath the streets of lower Manhattan to search for bodies, to stabilize buildings, to open tunnels, to turn off gas, and to restore essential services.

These workers and volunteers included traditional first responders such as firefighters, law enforcement officers, paramedics and the National Guard. They also included a large and highly diverse population of operating engineers, laborers, ironworkers, building cleaners, telecommunications workers, sanitation workers, and transit workers. These men and women carried out rescue-and-recovery operations, they sorted through the remains of the dead, they restored water and electricity, they cleaned up massive amounts of debris, and in a time period far shorter than anticipated, they deconstructed and removed the remains of broken buildings. Many had no training in response to civil disaster. The highly diverse nature of this workforce, and the absence in most of the groups who responded of any rosters to document who had been present at the site, posed unprecedented challenges for worker protection and medical follow-up.

The 9/11 workforce came from across America. In addition to tens of thousands of men and women from New York, New Jersey, and Connecticut, responders from every state in the nation stepped forward after this attack on the United States and are currently registered in the WTC Medical Monitoring Programs. Particularly large numbers came from California, Massachusetts, Ohio, Illinois, North Carolina, Georgia, and Florida.

### **The Exposures of 9/11 Responders**

The workers and volunteers at Ground Zero were exposed to an intense, complex and unprecedented mix of toxic chemicals. In the hours immediately after the attacks, the combustion of 90,000 liters of jet fuel created a dense plume of black smoke containing volatile organic compounds -including benzene, metals, and polycyclic aromatic hydrocarbons. The collapse of the twin towers (WTC 1 and WTC 2) and then of a third building (WTC 7) produced an enormous dust cloud. This dust contained pulverized cement (60-65% of the total dust mass), uncounted trillions of microscopic glass fibers and glass shards, asbestos, lead, polycyclic aromatic

hydrocarbons, hydrochloric acid, polychlorinated biphenyls (PCBs), organochlorine pesticides, furans and dioxins. Levels of airborne dust were highest immediately after the attack, attaining estimated levels of 1,000 to > 100,000  $\mu\text{g}/\text{m}^3$ , according to the US Environmental Protection Agency. Firefighters described walking through dense clouds of dust and smoke in those first hours, in which "the air was thick as soup". The high content of pulverized cement made the dust highly caustic (pH 10–11).

The dust and debris gradually settled, and rains on September 14 further diminished the intensity of outdoor dust exposure in lower Manhattan. However, rubble-removal operations repeatedly reaerosolized the dust, leading to continuing intermittent exposures for many months. Fires burned both above and below ground until December 2001.

Workers and volunteers were exposed also to great psychological trauma. Many had already lost friends and family in the attack. In their work at Ground Zero they commonly came unexpectedly upon human remains. Their stress was compounded further by fatigue. Most seriously affected by this psychological trauma were those not previously trained as responders.

### **Answering the Call: The medical response to 9/11 and the critical need for Centers of Excellence**

To provide medical services to the men and women who gave of themselves at Ground Zero, this nation has provided funding to establish and operate Centers of Excellence. These Centers bring together specialists from many fields of medicine who work together to provide state-of-the-art care for the complex diseases that we are seeing in the responders. The Centers also have the capacity to track patterns of disease and to provide information on new and emerging illnesses. Much of what we know about the health effects of the attacks on the WTC has been learned from the federally funded Centers of Excellence, including the World Trade Center Medical Monitoring and Treatment Program Center of Excellence coordinated by the Data and Coordination Center based at Mount Sinai (MMTP) and the Center of Excellence coordinated by the Bureau of Health Services of the Fire Department of New York (FDNY). The program coordinated by Mount Sinai consists of the Data and Coordination Center and a regional consortium of Clinical Centers of Excellence which include: the Environmental & Occupational Health Sciences Institute at

UMDNJ-Robert Wood Johnson Medical School in New Jersey, the World Trade Center Medical Monitoring and Treatment Program Clinical Center at Mount Sinai , the State University of New York Stony Brook/Long Island Occupational and Environmental Health Center, the Bellevue/New York University Occupational and Environmental Medicine Clinic, and the Center for the Biology of Natural Systems at Queens College in New York. In addition, there is a National Program providing services for responders who reside elsewhere in the United States.

The WTC Centers of Excellence were launched in late 2001 after initial reports were received of health problems in responders and volunteers. At that time the Congress provided resources for medical screening, and those funds became available in 2002. The WTC Worker and Volunteer Medical Screening Program was established as a regional and national consortium of Centers of Excellence that provided standardized, free, comprehensive screening examinations for WTC responders.

In July 2004, based on early findings from the screening programs, Congress authorized additional funding to establish an ongoing medical monitoring program for responders. This program too was organized as a network of Centers of Excellence. These Centers were selected by the National Institute for Occupational Health (NIOSH) through a fully competitive, peer-reviewed award process. This process established the World Trade Center Medical Monitoring Program which is funded through 2009. It provides baseline exams and well as follow up exams to WTC responders at 18 month intervals. NIOSH awarded funding to 2 sister programs of Centers of Excellence: one based at the Fire Department of New York (FDNY), and the other, a consortium of the 5 Clinical Centers listed above, coordinated by the Data and Coordination Center at Mount Sinai Medical Center, that serves all other responders.

Federal funding for Treatment services which became available for the first time in 2006 has made possible a newly combined Medical Monitoring *and* Treatment Program. This program is again based in the Centers of Excellence. It integrates all Monitoring and Treatment services and also supports a long needed expansion of services to provide care to a greater number of

responders than ever before. This new federal funding builds on generous but limited private support that had previously enabled some provision of treatment services to responders.

The primary goals of the Monitoring and Treatment Program are:

1. To provide free, comprehensive Monitoring Examinations at regular intervals for responders;
2. To provide medical and mental health treatment for all responders with WTC related illnesses, regardless of ability to pay and;
3. To document diseases possibly related to exposures sustained at the World Trade Center;

Thanks to federal support, over 21,000 WTC responders have received an initial comprehensive medical and mental health monitoring examination through the NY/NJ and National Consortium coordinated by Mount Sinai, and 8,489 responders have also received at least their first follow-up or comprehensive medical examination. Demand for this program remains great. Even now, six years since 9/11, about 400 new participants register to receive baseline screening examinations each month. Astonishingly, in August 2007, 771 new participants registered through our Phone Bank.

Our WTC Medical Treatment Program has also been active. We launched this program in 2003 with support from philanthropic gifts. Philanthropic support provided the sole financial base for the treatment program from 2003 to 2006. Since September 2006, we have begun to receive support for this program from the federal government. To date over 6,300 responders have received 47,000 medical and mental treatment services through this program.

In addition to the NY/NJ and National Consortium of Clinical Centers of Excellence coordinated by Mount Sinai, over 15,000 firefighters have participated in a parallel federally funded Center of Excellence coordinated by, and based at, the Fire Department of New York Bureau of Health Services (FDNY) in New York.

### **Health Effects Among WTC Responders**

Documentation of medical and mental health findings in 9/11 responders followed by timely

dissemination of this information through the peer-reviewed medical literature are essential components of our work. Documentation of our findings enables us to examine trends and patterns of disease and to assess the efficacy of proposed treatments. Dissemination of our findings and our recommendations for diagnosis and treatment to physicians across the United States permits us to share our knowledge and to optimize medical care. Such documentation and dissemination would be well nigh impossible in the absence of federally funded Centers of Excellence.

In September 2006, the Centers of Excellence that comprise our consortium published a paper in the highly respected, peer-reviewed medical journal *Environmental Health Perspectives*, a journal published by the National Institutes of Health. This report detailed our medical findings from examinations of 9,442 WTC responders whom we and our partner institutions had assessed between July 2002 and April 2004. I have appended this study to my testimony for your review, and I would like to direct your attention to a few key findings:

- Among these 9,442 responders, 46.5% reported experiencing new or worsened lower respiratory symptoms during or after their work at Ground Zero; 62.5% reported new or worsened upper respiratory symptoms; and overall 68.8% reported new or worsened symptoms of either the lower and/or the upper respiratory tract.
- At the time of examination, up to 2 ½ years after the start of the rescue and recovery effort, 59% of the responders whom we saw were still experiencing a new or worsened lower or upper respiratory symptom, a finding which suggests that these conditions may be chronic and that they will require ongoing treatment.
- One third of responders had abnormal pulmonary function test results. One particular breathing test abnormality – decreased forced vital capacity – was found 5 times more frequently in non-smoking WTC responders than in the general, non-smoking population of the United States.
- We found that the frequency and severity of respiratory symptoms was greatest in responders who had been trapped in the dust cloud on 9/11; that frequency and severity were next greatest in those who had been at Ground Zero in the first week after 9/11, but who had not been caught in the dust cloud; and that frequency and severity were lower yet in those who had arrived at Ground Zero after the first week.

These findings fit well with our understanding of exposures at the site and thus lend internal credibility to our data.

- Findings from our program released in 2004 have attested to the fact that in addition to respiratory problems, there also exist significant mental health consequences among WTC responders.

### **External Corroboration of our Findings**

The peer-reviewed article that we published one year ago in *Environmental Health Perspectives* gains further credibility by virtue of the fact that the findings we report in it are consistent with findings on 9/11 responders that have been reported by highly credible medical investigators outside of our consortium. The FDNY has published extensively on the burden of respiratory disease among New York firefighters. They have seen a pattern of symptoms that closely resembles what we observed. Forty percent of FDNY firefighter responders had persistent lower respiratory symptoms, and 50% had persistent upper respiratory symptoms more than one year after 9/11. FDNY noted that rates of cough, upper respiratory irritation and gastroesophageal reflux were highest in those firefighters who had been most heavily exposed on 9/11. FDNY physicians have also noted reactive airways disease, and highly accelerated decline in lung function in firefighters as well as in other responders in the year following 9/11.

Our findings receive further corroboration from reports released recently by the New York City Department of Mental Health and Hygiene from the WTC Registry that the health department has established with support from CDC. These reports noted increased rates of asthma and of post-traumatic stress disorder.

### **Current Medical Findings in 9/11 Responders**

To provide a “snapshot” that portrays in near real time the patterns of illnesses that we are currently seeing in 9/11 responders, we have recently performed an analysis of responders whom we saw for treatment in our federally funded consortium Centers of Excellence in the 3-month period between April 1, 2007 and June 30, 2007. During this time, 2,323 patients were seen in 4,693 visits. Findings among these responders who sought medical treatment included:



- Lower respiratory conditions in 40%. This includes asthma and the asthma-like condition known as reactive airways disease (RADs) in 30%. Other lower respiratory conditions include chronic cough (7%) and chronic obstructive pulmonary disease (5%).
- Upper respiratory conditions in 59%. This includes rhinitis (chronic nasal irritation or “runny nose”) in 51%, chronic sinusitis in 20 % and chronic laryngitis in 5%.
- Gastrointestinal conditions in 43%. Most of these were cases of gastro-esophageal reflux disorder (GERD).
- Mental health problems in 36%. This includes PTSD, in 21% and depression in 11.6%.
- Musculoskeletal conditions in 9% with treatment sought most commonly for lower back problems.
- Social disability was also commonly encountered. More than 30% of previously healthy responder patients were either unemployed/laid off, or on sick leave/disability during the 3-month time period of observation. Twenty eight percent had no medical insurance at some point during this period.

### **Future Health Risks and Unanswered Questions**

Two major unanswered questions confront us as we consider the future health outlook for the brave men and women who responded to 9/11:

1. Will the respiratory, gastrointestinal, musculoskeletal and mental health problems that we are currently observing in responders continue to persist? For how long? And with what degree of severity and associated disability? These questions are especially important in the case of those responders who sustained very heavy exposures in the dust cloud on 9/11, in those who served in the first days after 9/11 when exposures were most intense, and in those who had prolonged exposures in the weeks and months after 9/11.
2. Will new health problems emerge in future years in responders as a consequence of their exposures to the uniquely complex mix of chemical compounds that contaminated the air, soil and dust of New York City in the aftermath of 9/11?

Responders were exposed to carcinogens, neurotoxins, and chemicals toxic to the respiratory tract in concentrations and in combinations that never before have been encountered. The long-term consequences of these unique exposures are not yet known.

### **Concluding Comments**

Six years following the attacks on the World Trade Center, thousands of the brave men and women who stood up for America and who worked on rescue, recovery, and clean up at Ground Zero are still suffering. Respiratory illness, psychological distress and financial devastation have become a new way of life for many.

The future health outlook for these responders is uncertain. The possibility is real that illnesses will persist; at least in some, and that new conditions – diseases marked by long latency – will emerge in others.

Only continuing, federally supported medical follow-up of the 9/11 responders through Centers of Excellence that are equipped to comprehensively evaluate responders, to document their medical findings, and to provide compassionate state-of the-art treatment will resolve these unanswered questions.

Thank you. I shall be pleased to take your questions.